July 7, 2005

ADDENDUM No. 2
To RFP No. PT-2671-599428

The following question have been submitted by a prospective source and the corresponding answers are provided for clarification.

Question #1:
SE-001 of the DRD (Exhibit II) states that "All level 4 FRs are to have the following eight sections." Can you please supply requirement classification level?

Answer to #1:
TDS is governed by level 5 functional requirements.

Question #2:
SE-001 of the DRD (Exhibit II) states that "Where options are allowed in the implementation of any requirements herein, designers should conform as near as possible to the patterns of subsystem and interface design required by the documents listed." Can you please clarify with an example?

Answer to #2:
This does not apply to the TDS.

Question #3:
SE-001, Section 3.0 of the DRD (Exhibit II) states that "Functional Requirements, shall contain a functional block diagram and a listing of each of the FRs that the subsystems must satisfy." Can requirements be numbered in accordance with supplier's requirements management tool?

Answer to #3:
Yes.

Question #4:
SE-001, Section 5.0 of the DRD (Exhibit II) states that "Interface Definition, shall contain a summary compilation of all system-level interfaces, but not duplicate information in the applicable Interface Control Documents (ICDs)." Instrument ICD is not listed in System Engineering documents and not described in DRD exhibit II document. We assume it will be provided in the formal RFP, can you please confirm?

Answer to #4:
ICD will be provided at a later date.

Question #5:
SE-001, Section 7.0 of the DRD (Exhibit II) states that "Physical Characteristics and Constraints, shall defined representative values of the physical characteristics of the

subsystem as follows, but should reference PDxxxx for initial resource allocations:" Can you please clarify what PDxxxx and PDxxx below refer to?

Answer to #5:
This does not apply to the TDS. Please refer to Exhibit III for resource allocations.

Question #6:
The document JPL STD-00009 is not in our hands, can you please supply it?

Answer to #6:
Will do.

Question #7:
In reference to 4.1.7 of Exhibit III, it is understood that TDS will measure at each beam velocity or slant range, not both at the same time, is this correct?

Answer to #7:
That is correct.

Question #8:
In reference to 4.1.7 of Exhibit III, beam and measurement type command shall take into account the need, in velocity mode, to complete a 200 ms-cycle of 4-per-beam velocity measurements.

Answer to #8:
The specific beam and measurement type command will be determined during the preliminary design phase in conjunction with the selected vendor to meet the requirements of the MSL EDL navigation filter design.

Question #9:
In reference to 4.2.1 of Exhibit III, are Vx, Vy, Vz required in output or velocity along beam direction? In this case the on-board computer would require for the computation also the antenna scalar factors (boresight data). Since the instantaneous velocity noise is referred to Vx,Vy and Vz, is not clear if JPL requires the Doppler shift (FD) beam per beam plus the scale factors (every 50 msec), or if JPL requires the Vx,Vy and Vz velocities (every 200 msec). The sign of Vx (positive forward ?), Vy (positive right ?) and Vz (positive UP ?) must be agreed with JPL.

Answer to #9:
Beam velocity (Doppler shift) and corresponding antenna scale factor per beam are required every 50 msec. The Vx, Vy, Vz requirement is used for performance verification only. The X-Y plane defines the horizontal plane whereas +z axis points downward (positive vertical velocity).

Question #10:

In reference to 4.2.7 of Exhibit III, we assume that the TDS Turn On command is the command to activate RF, but that the TDS is already powered on and initialized.

Answer to #10:
Yes, the TDS is already powered on and initialized and is in Standby mode.

Question #11:
In reference to 4.13.3.5 of Exhibit III, are the values in table 4.13.3.5.1 of the ERD expressed in dB V/m? Can you supply us a curve of the limits?

Answer to #11:
Yes, the values are expressed in dB V/m. A curve can be constructed from the limits in the table.

Question #12:
In reference to Exhibit IV's Software Safety/Hazard/Fault Analysis, we understand that the TDS SW is not Safety Critical.

Answer to #12:
That is the correct assumption.

Question #13:
In reference to 2.2 of Exhibit VI on Fault Tolerance, if the Doppler Equipment stops to generate its data, is the Space Transportation system able to perform a landing by means of other navigation systems that maybe available?

Answer to #13:
The TDS is mission critical. If the TDS fails to provide valid measurements over the specified operational envelope, there are no physical or functional redundancies for the TDS measurement functions. The failure scenario varies depending on when the TDS fails and the mode of the failure.

Question #14:
In reference to 2.2 of Exhibit VI on Fault Tolerance, the Safety Requirements for fault tolerance are contained in NSTS 1700.7 or in the EWR 127-1 documents for the TDS: can you please clarify which one is applicable?

Answer to #14:
The TDS shall comply with the system safety requirements of AFSPC MAN 91-710 "Range Safety User Requirements Manual" (the updated version of EWR 127-1) and KHB 1710.2, "Kennedy Space Center Safety Practices Handbook". Specifically, inadvertent operation by the TDS leading to a critical failure shall be inhibited by at least two independent mechanical or electrical inhibits (one of which is, in general, provided by the launch vehicle).

Question #15:
In reference to 2.11.3 of Exhibit VI on Software Hazard Analysis, must supplier perform a quantitative or qualitative Software Hazard Analysis? Please clarify. In either case, please let us know if you have specific guidelines or if Supplier standards are acceptable.

Answer to #15:
Software Hazard Analysis does not apply to the TDS.

Question #16:
In reference to 1.3.1 of Exhibit VI on Safety Plan, please clarify if the software safety analysis shall be performed separately or integrated in the system safety analysis?

Answer to #16:
No software safety analysis is required for the TDS.

Miscellaneous Information

Either Attachment A19 or Attachment A15 is acceptable for submission.

All General provisions that are not applicable are deemed to be self deleting.